Large Artery Stiffening and Remodeling Are Independently Associated With All-Cause Mortality and Cardiovascular Events in Chronic Kidney Disease

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Résumé en anglais	Chronic kidney disease, even at moderate stages, is characterized by a high incidence of cardiovascular events. Subclinical damage to large arteries, such as increased arterial stiffness and outward remodeling, is a classical hallmark of patients with chronic kidney disease. Whether large artery stiffness and remodeling influence the occurrence of cardiovascular events and the mortality of patients with chronic kidney disease (stages 2–5) is still debated. This prospective study included 439 patients with chronic kidney disease (mean age, 59.8±14.5 years) with a mean measured glomerular filtration rate of 37 mL/min per 1.73 m2. Baseline aortic stiffness was estimated through carotid-femoral pulse wave velocity measurements; carotid stiffness, diameter, and intima-media thickness were measured with a high-resolution echotracking system. For the overall group of patients, the 5-year estimated survival and cumulative incidence of cardiovascular events were 87% and 16%, respectively. In regression analyses adjusted on classical cardiovascular and renal risk factors, aortic stiffness remained significantly associated with all-cause mortality (for 1 SD, Cox model–derived relative risk [95% CI], 1.48 [1.09–2.02]) and with fatal and nonfatal cardiovascular events (for 1 SD, Fine and Gray competing risks model–derived relative risk [95% CI], 1.35 [1.05–1.75]). Net reclassification improvement index was significant (29.0% [2.3–42.0%]). Carotid internal diameter was also independently associated with all-cause mortality. This study shows that increased aortic stiffness and carotid internal diameter are independent predictors of mortality in patients with stages 2 to 5 chronic kidney disease and that aortic stiffness improves the prediction of the risk.
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